

REMARKS

The application has been carefully reviewed in light of the Office Action dated March 5, 2004. Claims 1, 8, 23 and 24 have been amended. Claim 3 has been canceled. Claims 1, 2, 4, 8 and 23-29 remain pending in this application.

Claims 1-4, 8 and 23-26 stand rejected under 35 U.S.C. § 102(e) as being anticipated by Ingino, Jr., U.S. Patent No. 6,441,660 (hereinafter "Ingino"). Applicant traverses the rejection and respectfully requests reconsideration.

Claim 1 recites a charge pump circuit comprising *inter alia* "a first capacitor connected to said first node for applying said DOWN pulse signal to said first node and a second capacitor connected to said second node for applying said $\overline{\text{UP}}$ pulse signal to said second node."

Claim 8 recites a charge pump circuit comprising *inter alia* "a first capacitor for applying said complementary first switching signal to said first node and a second capacitor for applying said complementary second switching signal to said second node."

Claim 23 recites a method of operating a charge pump comprising *inter alia* "applying a complementary signal of said first applied switching signal through a capacitor to a connection between said first switching transistor and an associated bias transistor" and "applying a complementary signal of said second applied switching signal through a capacitor to a connection between said second switching transistor and an associated bias transistor." Applicant respectfully submits that Ingino fails to teach or suggest all the limitations of claims 1, 8 and 23.

The Office Action alleges that M_{d2} and M_{d3} are capacitors. Presuming *arguendo* that M_{d2} and M_{d3} are capacitors, Ingino still fails to disclose the claimed

invention. To the contrary, any capacitors used by Ingino “acquire charge during approximately the same time period that transistor M_{s2} is injecting charge. The injected charge (are a large portion thereof) may be drawn into the channels of M_{d3} and M_{d4} as these channels acquire charge, thus reducing the amount of charge actually injected onto the drain and source nodes of transistor M_{s2} .” See Column 9, lines 2-10.

Transistors M_{d1} , M_{s1} and M_{d2} operate in the same fashion as transistors M_{d3} , M_{s2} and M_{d4} . Thus, Ingino does not use a first capacitor to apply “said DOWN pulse signal to said first node and a second capacitor connected to said second node for applying said \overline{UP} pulse signal to said second node” or “a first capacitor for applying said complementary first switching signal to said first node and a second capacitor for applying said complementary second switching signal to said second node.” Similarly, Ingino fails to disclose operating a charge pump circuit by “applying a complementary signal of said first applied switching signal through a capacitor to a connection between said first switching transistor and an associated bias transistor” and “applying a complementary signal of said second applied switching signal through a capacitor to a connection between said second switching transistor and an associated bias transistor.”

Accordingly, claims 1, 8 and 23 are allowable over Ingino.

Claims 2, 4 and 25-27 depend from claim 1, claim 28 depends from claim 8, claim 24 and 29 depend from claim 23 and are allowable along with claims 1, 8 and 23 for the reasons mentioned above and on their own merits.

Claims 27-29 stand rejected under 35 U.S.C. 103(a) over Applicant’s admitted prior art (AAPA), presumably Figure 1 of the present application, in view of Ingino. The rejection is respectfully traversed and reconsideration is requested. Claim 27 depends from claim 1, claim 28 depends from claim 8, and claim 29 depends from claim 23. Applicant respectfully submits that claims 27-29 are allowable over Ingino along with claims 1, 8 and 23 for at least the reasons mentioned above and on their own merit.

In addition, Ingino discloses “a charge pump configured to provide a voltage on an output node; and a loop filter coupled to the output node. A rate at which the charge pump is able to change the voltage is programmable and frequencies filtered by the loop filter are programmable.” See Column 2, lines 7-11. As noted above, Ingino fails to teach or suggest the claimed invention. The claimed invention mitigates the problem of current overshoot and transistor turn-off slowness in charge pump circuits while maintaining the speed of the circuit. Ingino and AAPA fail to rectify these problems.

Thus, Ingino fails to address the problems identified by the present invention because the circuit of Ingino merely utilizes parasitic capacitance to reduce clock feedthrough error, “Since the gate terminal of transistor M_{d3} receives the complement of the signal on the gate terminal of transistor M_{s2} , the clock feedthrough from transistor M_{d3} to the drain of transistor M_{s2} (through a total parasitic capacitance of C_{p3}) may be approximately the same as the clock feedthrough from transistor M_{s2} to the drain of transistor M_{s2} , but of the opposite polarity. Summing these two clock feedthrough errors may produce a total clock feedthrough error on the drain of transistor M_{s2} of approximately zero, thereby reducing the clock feedthrough error. A similar discussion applies to the gate to source and drain parasitic capacitances of transistor M_{d4} and the gate to source parasitic capacitance of transistor M_{s2} (and to the transistors M_{d1} , M_{d2} , and M_{s2})” See Column 9, lines 52-65.

Accordingly, Ingino and the AAPA fail to rectify the problems identified and addressed by the present application. Since neither AAPA nor Ingino recognizes the problem, there is no motivation in the references for the proposed combination. Indeed, the courts and PTO have uniformly established that recognition of the source of a problem renders a claimed invention unobvious. In re Sponnoble, 405 F.2d 578, 160 U.S.P.Q. 237 (CCPA 1969); Ex parte Campbell 211 U.S.P.Q. 575 (PTO Bd. App. 1981).

Stated otherwise, if the prior art does not even recognize the problem, the solution to the problem can not be deemed obvious. Accordingly, claims 27-29 are allowable over the cited combination.

In view of the above, each of the presently pending claims in this application is believed to be in immediate condition for allowance. Accordingly, the Examiner is respectfully requested to pass this application to issue.

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Respectfully submitted,

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